The results obtained in these observations are thought to be only roughly comparable, since varying atmospheric and other conditions may affect the readings, such as wind movement, humidity, intensity of solar radiation, composition of coloring matter, etc.

DIURNAL PRESSURE CHANGE IN GULF OF FONSECA.

Capt. E. S. Jackson, commanding officer of the U. S. S. *Tacoma*, recently reported through the Hydrographic Office what he considered to be an instance of unusual diurnal pressure change. During the period from January 29 to February 29, 1920, while the *Tacoma* was stationed at Amalpa, Honduras, Gulf of Fonseca, Capt. Jackson observed daily between the hours of 12 noon and 1 p. m. a very sharp fall in the barograph trace. The average drop for an 8-day period, from January 29 to February 4, inclusive, during which the fall was most pronounced, was slightly more than 0.05 inch. There was no accompanying noticeable weather change.

Central America is on the northern edge of the area of greatest diurnal pressure variation in the Western Hemisphere, an area which, roughly, embraces Central America and the north-central portions of South America. As an example of the change that may occur in this region it is noted that at Mexico City the average diurnal fall in pressure from noon to 1 p. m. is about 0.04 inch.

The hourly rate of fall is, however, considerably less than that observed by Capt. Jackson for the hour 12–1 p. m., although the average total fall for all the afternoon hours is fully as much.

The barometric trace from the Weather Bureau station at Swan Island, off the northern coast of Honduras, the nearest point from which such a record is available, shows no unusual characteristics for the period in question.

Capt. Jackson has promised a further report to be made from La Union, Salvador, also in the Gulf of Fonseca.

THE CLIMATE OF JAPAN AND FORMOSA.

By ELLEN MARY SANDERS.[1]

The climate of the festoon of islands which begins in the south with Formosa near latitude 21° N., and stretches northward to Yezo near latitude 46° N., is exceptionally interesting, not only as illustrating the change of climate which naturally comes about with such a change of latitude, but because it presents so great a contrast to the other countries bordering the oceans lying in the same latitude. A large body of data is now available, since the Central Meteorological Observatory of Tokio has been at work for over thirty years observing and collecting the results of other observers, and the observatories of Formosa have been working for close upon twenty years, so that a more detailed description of the climate of Japan and Formosa is possible than has as yet been given. Such a description is the aim of the present article. It can only be regarded as tentative, liable to modification when further data are forthcoming.

No description of the climate of Japan would be complete which did not emphasize the influence of the continent of Asia. Therefore, at the risk of repeating what is already well known an introductory account of the general results of the position of the islands is included. This is followed by a consideration as to the effects of ocean currents, and an account of the storms to which the islands are subject, on both of which topics new material is available. After these general considerations a detailed description of the climatic zones is given, based on the reports of the observatories of Japan and Formosa.

General results of position.[2]—Japan is situated off the east coast of Asia, so that during the cold season it has an immense stretch of frozen land to windward, and as a result its temperature is far colder than is normal for its latitude. In addition to the modification in temperature the distribution of rainfall is also a result of the proximity of the great land mass.

In winter the central part of Asia becomes an area of high pressure since the land cools more quickly than the water, therefore the winds blow out from the center. Fig. 1 shows the winter winds of Japan and Formosa. Japan comes into the track of those winds which blow from the NW. coming across the cold lands of northern Asia. To these winds the north coast of Japan owes its rain, and the cold winter, particularly marked in the island of Yezo. Formosa, on the other hand, comes into the zone of the NE. Trade Winds during its cool season, and thus has winds coming over the ocean from a northeasterly direction.

In summer the central part of Asia becomes an area of low pressure, due to the heating of the land mass, and consequently winds blow in toward the center from all sides. Fig. 2 shows the direction of such of these winds as cross Japan. It will be noticed that they blow from the SE. and that they traverse the ocean before reaching Japan, thus they are warm, moisture-laden winds. To these winds the southern coast of Japan owes the greater part of its rain, while Formosa, which lies far enough to the south to get the full force of the Monsoon, shares with China one of the heaviest rainfalls of the entire globe.

Ocean currents.—It was formerly thought that the ocean currents which flow in the adjoining seas were one of the most important factors of the climate of Japan. Recent investigations have led to a modification of this view. Therefore it is necessary to examine the effects of the ocean currents on the climate.

There are two warm ocean currents, the Tsushima and the Kuroshio, and one cold current, the Oyashio. The warm current, called the Tsushima, enters the sea of Japan through the strait of Korea and touches the northwest coast of Nippon.[2] The curve of the isotherms on the west coast of Japan, which may be seen in Fig. 7, is perhaps due in part to this current, although, in the main, the relief is responsible for the course of the isotherms. A large amount of the fog and rain which comes to the west coast during the winter may also be due in part to this current, since in winter the prevailing wind comes straight from the part of the ocean which is warmed by it.

The cold current, called the Oyashio, flowing in a southwesterly direction, touches the eastern and southern coasts of Hakodate and also eastern Nippon, and may contribute toward lowering the temperature of these districts. The other warm current, the Kuroshio, which touches the southern coast of Nippon in its course toward the northeast, is far more powerful than either of the others, and higher in temperature than the Tsushima. The great amount of rain on the southeastern coast of Japan during the summer may be partly due to this current.

[1] B. A. London and Bristol, England: Docteur de l'Univ. de Paris, France; British scholar, Bryn Mawr, U. S. A.

[2] Atlas of Meteorology. Bartholomew and Herbertson, (a) Plate 14 Pressure.

[2] Art. 4, Vol. XXXVII, Journal of Coll. of Sc. Imperial Univ. of Tokio.